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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/008,746	11/05/2001	Parapura T. Rajkumar	6175-045	5966

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EXAMINER	
MCCARTNEY, LINZY T	

ART UNIT	PAPER NUMBER
2671	9

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/008,746	RAJKUMAR ET AL.	
	Examiner	Art Unit	
	Linzy McCartney	2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *25-31* is/are allowed.

6)☒ Claim(s) *1-6,8,12-14,18 and 21* is/are rejected.

7)☒ Claim(s) *7,9,15-17,19,20,22-24 and 29-31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,417,865 to Bou in view of U.S. Patent No. 5,237,647 to Roberts et al. (Roberts).

a. Referring to claim 1, Bou discloses automatically analyzing a plurality of candidate orientations to select a preferred orientation for creation of a reproduction of a first component (column 6, line 67 - column 7, line 8; column 5, lines 35 - 43) and creating a new component of a three-dimensional object that is a reproduction in the preferred orientation of the first component, the new component being created based on a position of the first component with respect to a surface positioned in the three-dimensional modeling space (column 5, lines 35 - 43). Bou does not explicitly disclose receiving data to select a first component of the three-dimensional object, said surface comprising a plane of symmetry, or wherein said surface is not a component of the three dimensional object. Roberts discloses said surface comprises a plane of symmetry (column 16, line 67 – column 117, line 14; Fig. 23) and wherein said surface is not a component of the three dimensional object (column 16, line 67 – column 117, line 14; Fig. 23). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Bou by wherein said surface comprises a

plane of symmetry, wherein said surface is not a component of the three dimensional object as taught by Roberts and receiving data to select a first component of the three-dimensional object, Official Notice taken. The suggestion/motivation for doing so would have been because it would facilitate the creation and modification of a design (Roberts, column 5, lines 64-65) and it would allow a user to manipulate a part of three-dimensional object.

b. Apparatus of claim 2 performs steps recited in method claim 1; therefore they are similar in scope and rejected under the same rationale.

c. Referring to claim 3, Bou discloses receiving input from a user to position the surface in the three-dimensional modeling space (column 5, lines 25-26).

d. Referring to claim 4, Bou does not explicitly disclose the surface comprises a plane logically separating the modeling space into a first and a second section; and the first component is positioned in the first section of the modeling space; and creating the new component comprises creating the new component in the second section. Roberts discloses the surface comprises a plane logically separating the modeling space into a first and a second section (Fig. 23); and the first component is positioned in the first section of the modeling and creating the new component comprises creating the new component in the second section (column 17, lines 6-14). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Bou by separating the modeling space into a first and second section using a plane wherein the first component is positioned in the first section and creating the new component in the second section as taught by Roberts. The suggestion/motivation for

doing so would have been because it would facilitate the creation and modification of a design (Roberts, column 5, lines 64-65).

3. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bou in view of Roberts as applied to claim 4 above further in view of U.S. Patent No. 4,701,752 to Wang.

a. Referring to claim 5, Bou does not explicitly disclose the first component comprises a first plurality of vertices; and creating the new component comprises determining a second plurality of vertices each vertex in the second plurality corresponding to a vertex in the first plurality, and each vertex in the second plurality being determined based on a position of said corresponding vertex with respect to the plane. Wang discloses the first component comprises a first plurality of vertices (Fig. 2) and creating the new component comprises determining a second plurality of vertices each vertex in the second plurality corresponding to a vertex in the first plurality (Fig. 3; column 6, lines 17-19). Roberts discloses the second object being determined based on a position of said corresponding first object with respect to the plane (column 16, line 67 – column 17, line 14). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Bou by the components comprising vertices and the position of the vertices being determined based upon a position of the corresponding vertices with respect to the plane as taught by Wang. The suggestion/motivation for doing so would have been because it would allow the user to specify the angle of the plane in which the mirror image is generated (Wang, column 1, lines 59-62).

b. Referring to claim 6, Bou does not explicitly disclose creating such that the first and the new component are in symmetrical position with respect to the plane. Wang discloses creating such that the first and the new component are in a symmetrical position with respect to the plane (Fig. 3).

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bou as applied to claim 1 above further in view of Schlieve, "Illustrated AutoCAD Release 11" (Schlieve).

a. Referring to claim 8, Bou does not explicitly disclose the first component comprises a plurality of first sub-components; and creating the new component comprises creating a plurality of new sub-components, each of the new sub-components corresponding to one of the first sub-components. Schlieve discloses the first component comprises a plurality of first sub-components (page 80, see Figure) and creating the new component comprises creating a plurality of new sub-components, each of the new sub-components corresponding to one of the first sub-components (page 80, paragraph 1; see Figure; page 82, step 7 and Figure). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method Bou by the first component comprising a plurality of sub-components and creating new components comprising a plurality of new sub-components which correspond to the first sub-components as taught by Schlieve. The suggestion/motivation for doing so would have been because it would provide a convenient way to duplicate any entity of group of entities (Schlieve, page 80, paragraph 1).

5. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts in view of U.S. Patent No. 6,323,859 to Gantt.

a. Referring to claim 12, Roberts discloses positioning a plane in the three-dimensional modeling space to logically subdivide the modeling space into a first division comprising a first component and a second division in which a reproduction of the first component is to be located and to define a reference geometry for creation of the reproduction of the first component (column 17, lines 6-14; Fig. 23) and constructing the reproduction of the first component such that the first component and the reproduction are symmetrical to each other with respect to the plane (column 17, lines 6-14). Roberts does not explicitly disclose computing a plurality of geometrically transformed components by applying a plurality of different transformations to the first component, each transformed component comprising a different orientation of the first component or constructing based on one of the plurality of geometrically transformed components. Gantt discloses computing a plurality of geometrically transformed components by applying a plurality of different transformations to the first component, each transformed component comprising a different orientation of the first component (column 16, lines 5-25; Fig. 13C). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Roberts by applying a plurality of different transformations to the first component, each comprising a different orientation as taught by Gantt and constructing based on the plurality of transformed components. The suggestion/motivation for doing so would have been because it would save time and increase productivity (Gantt, column 6, lines 29-32) and because the method of Roberts replicates the last known orientation of the object.

b. Apparatus of claim 13 performs steps recited in method claim 12; therefore they are similar in scope and rejected under the same rationale.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts in view of Gantt as applied to claim 12 above further in view of Bou.

a. Referring to claim 14, Roberts does not explicitly disclose determining a preferred geometric transformation of the first component for use in constructing the reproduction by comparing locations of geometric features of the transformed components. Bou discloses determining a preferred geometric transformation of the first component for use in constructing the reproduction by comparing locations of geometric features of the transformed components (column 4, lines 11-37). At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the method of Roberts by determining a preferred transformation by comparing geometric features as taught by Bou. The suggestion/motivation for doing so would have been because it would improve the placing objects in a graphics system (Bou, column 1, line 61 – column 2, line 9).

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts in view of Gantt as applied further in view of Bou as applied to claim 14 above further in view of Wang.

a. Referring to claim 18, Roberts discloses computing a plurality of mirrored objects, each mirrored object corresponding to one of the first plurality of objects such that each mirrored object and said corresponding one of the plurality of objects are equidistant to the plane and positioned on different sides of the plane (column 16, lines 67 – column17, line 14). Roberts does not explicitly disclose the objects are comprised of

vertices, comparing the locations of geometric features, or for each one of the transformed components computing an acceptance value based on a difference between locations of the vertices. Wang discloses objects comprised of vertices (Fig. 2). Bou discloses computing an acceptance value based on a difference between locations, the acceptance value indicative of a preferred transformation (column 6, line 67 – column 7, line 8). At the time invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of Roberts by comprising the objects with vertices and computing an acceptance value based on a difference between locations, the acceptance value indicative of a preferred transformation as taught by Wang and Bou, respectively. The suggestion/motivation for doing so would have been it would allow the user to specify the angle of the plane in which the mirror image is generated (Wang, column 1, lines 59-62) and because it would improve the placing objects in a graphics system (Bou, column 1, line 61 – column 2, line 9).

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts in view of Gantt further in view of U.S. Patent No. 6,212,484 to Chen further in view of Elliott et al, "Inside 3D Studio MAX 2" (Elliott).

a. Referring to claim 21, Roberts does not explicitly disclose storing a data structure associating the first component and the reproduction; and initiating an update of the reproduction in response to a change in the structure of the first component. Chen discloses storing a data structure associating the first component and the reproduction (column 5, lines 59-64). Elliott discloses initiating an update of the reproduction in response to a change in the structure of the first component (page 34, paragraph 1). At the

time the invention was made, it would have been obvious to a person of ordinary skill in the art to further modify the invention of Roberts associating the first component and the reproduction and updating the reproduction in response to a change in the structure as taught by Chen and Elliott respectively. The suggestion/motivation for doing so would have been to avoid processing the feature equation when mirroring a part (Chen, column 2, lines 1-17) and because it would save considerable effort (Elliott, page 34, paragraph 1).

Allowable Subject Matter

9. Claims 25-31 allowed.

10. Claims 7, 9, 15-17, 19, 20, 22-24, and 29-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 2/23/04 have been fully considered but they are not persuasive. Regarding applicant's contention that Bou fails to teach mirroring a component, the mirroring limitation is recited in the preamble and therefore is not given patentable weight. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Applicant contends that Bou does not teach creating an object, note that by dragging an object from the object library window (column 5, lines 24-28) Bou creates an object. In response to applicant's argument that Bou is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be

reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, note that Bou is within the field of applicant's endeavor, i.e. both applicant and Bou relate to modeling techniques used to create three dimensional objects.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Linzy McCartney** whose telephone number is **(703) 605-0745**. The examiner can normally be reached on Mon-Friday (8:00AM-5: 30PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Mark Zimmerman**, can be reached at **(703) 305-9798**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

ltm
26 April 2004

MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600